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IS 14319 (1995): Laminated paper board pack for vanaspati
[CHD 15: Paper and its products]

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Indian Standard

LAMINATED PAPER BOARD PACK FOR VANASPATI — SPECIFICATION

UDC 55.040 : 67.200.10

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

October 1995 **Price Group 3**

Paper and Pulp Based Packaging Sectional Committee, CHD 16

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by Paper and Pulp Based Packaging Sectional Committee had been approved by the Chemical Division Council.

The laminated paper board pack is already in the market for packing edible oils and due to its popularity in packaging, the need has been felt to formulate standard for packaging vanaspati.

In formulating this standard, necessary care has been taken to ensure adequate storage life for vanaspati that is there would be no significant change from the initial quality. The system of packaging shall have adequate physical strength to withstand transportation and transit hazards and the ink used for the packs shall be such that it would not leach into vanaspati.

In general, packaging material must ensure that vanaspati packed remains within the accepted quality norms. The packaging material itself must also not deteriorate with the passage of time and causes failure and leakage. It has been felt that a shelf life of 90 days shall cover market needs for transit, distribution and storage. The performance characteristics are vital in enabling the proper choice of material, but they are time consuming and expensive. Although these requirements need to be correlated to certain physical properties which could be determined more regularly, easily and within a shorter time period. The tests are therefore, classified as type tests (product/type approval) and acceptance test (product identification). The packaging material shall be subjected to product/type approval tests and then shall be tested for physical characteristics which should be recorded and will be the controlling specification as long as there is no change in the packaging material.

The promulgation of the *Standards of Weights and Measures (Packaged Commodities) Third Amendment Rules* 1994 requires that edible oils, ghee, vanaspati and butter oils may be packed either by weight or volume basis in sizes (50 g or 50 ml, 100 g or 100 ml, 200 g or 200 ml, 250 g or 250 ml, 500 g or 500 ml, 1 000 g or 1 000 ml). The rule also states that in case packing has been done on mass basis declaration of volume within brackets and if it has been done on volume basis declaration of mass within brackets is to be given.

The composition of the technical committee responsible for formulation of this standard is given in Annex F

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LAMINATED PAPER BOARD PACK FOR VANASPATI — SPECIFICATION

1 SCOPE

This standard covers the requirements of packaging materials for laminated paper board pack made of combination of paper, plastics and aluminium foil for the retail packing of vanaspati in net quantities of 50 ml or 50 g, 100 ml or 100 g, 200 ml or 200 g, 250 ml or 250 g, 500 ml or 500 g and 1 000 ml or 1 000 g.

2 NORMATIVE REFERENCES

2.1 The Indian Standards listed in Annex A contain provisions which through reference in this text constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revisions, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards that are necessary adjuncts to this standard.

3 TERMINOLOGY

3.1 For the purpose of this standard, definitions given in IS 4261 : 1967, IS 2828 : 1964 and IS 7019 : 1982 and the following shall be applicable.

3.2 Type Test

Test carried to prove conformity with specifications. These are intended for product/type approval of given type of packaging material as per the procedure given in Annex B. The following shall constitute type (product approval) tests:

a) Material and workmanship (*see* **4.3.2**);
b) Thickness (*see* **4.3.3**);
c) Vibration and storage test (*see* **4.3.4**);
d) Overall migration (*see* **4.3.5**);
e) Drop test (*see* **4.3.6**); and
f) Water Vapour Transmission Rate (WVTR) and Oxygen Transmission Rate (OTR) (*see* **4.3.7**).

3.3 Acceptance Test

Tests carried out on sample taken from lot passing type tests for the purpose of acceptance of the lot on a batch to batch basis. The following shall constitute the acceptance (product identification) tests:

a) Material and workmanship (*see* **4.3.2**);
b) Thickness (*see* **4.3.3**);
c) Drop test (*see* **4.3.6**); and
d) Product resistance of printed packs (*see* **4.3.8**).

4 REQUIREMENTS

4.1 Packaging Material

4.1.1 The packaging material shall be made of laminated paper/paper board produced by extrusion/co-extrusion lamination/coating process.

4.1.2 The laminated paper/paper board shall be made of plastic such as low density polyethylene (LDPE), linear low density polyethylene (LLDPE), copolymers (Ethylene Acetic Acid), inomers and copolymer, aluminium foil, paper/paper board, etc.

4.1.3 The plastic used for laminated paper/paper board and coming in contact with product shall conform to food grade requirements of relevant Indian standards.

4.1.4 The packaging material shall meet with the shelf life storage and overall migration limit value along with other requirements given in this standard.

4.1.5 The thickness of packaging material shall be so as to meet the performance tests requirements given under **4.3.3.1** and **4.3.3.2**.

4.2 Pack Construction

4.2.1 The packs may be preformed or formed, filled and sealed on a suitable form-fill-seal machine.

4.3 Tests

4.3.1 The materials comprising the packaging materials shall be declared and of food grade quality conforming to relevant Indian standard on food contact plastics.

4.3.2 *Material and Workmanship*

4.3.2.1 The packaging material shall be uniform in texture/finish. It shall be free from pin holes, streak particle of foreign matter, wrinkles and undispersed raw materials. There shall be no visible defects such as holes, tears or blisters. The edges shall be free from cuts, nicks and wrinkles.

4.3.2.2 The packaging material shall be free from any extraneous odour.

4.3.3 *Thickness*

4.3.3.1 The overall thickness/grammage of the package/packaging material and the thickness of the individual layers shall be declared by the producer in accordance with the acceptance (product identification) tests.

4.3.3.2 The overall thickness/grammage shall be within ±10 percent of the declared value. The overall thickness/grammage shall be measured according to the method given in **A-2** of IS 2508 : 1984.

4.3.4 *Vibration and Storage Test*

4.3.4.1 The packs made from packaging material shall be tested with vanaspati to be packed into them for storage properties. The packaging material shall be subjected to vibration test as given in Annex C.

4.3.4.2 The storage test shall be carried out both at 38 ±1°C and 90 ±2 percent relative humidity (accelerated conditions) and 27 ±1°C and 65 ±2 percent relative humidity (standard condition). The free fatty acid (as oleic acid percent by mass), moisture content, peroxide value (pv) and rancidity of contents as per IS 8639 : 1977 shall be noted initially and also the end of 30 and 90 days when tested under accelerated and standard conditions respectively. The packaging material shall be accepted if there is no delamination, no leakage and the vanaspati does not show the rancidity or increase in moisture content, free fatty acid and peroxide value above the permissible limit specified in the corresponding Indian Standards on vanaspati at the end of 30 days and 90 days under accelerated and standard conditions respectively.

NOTE — In case of dispute, the method specified in IS 8639 : 1977, should be referred.

4.3.5 *Overall Migration*

4.3.5.1 Representative sample of packaging material shall be subjected to overall migration test with n-heptane at 27 ±1°C for 30 minutes according to the method given in IS 9845 : 1986 with only exception that rectangular glass jar may be replaced by 500 ml glass beaker. Care must be taken that the sample is completely immersed in the solvent and does not touch the wall of the jar or beaker. The maximum extraction value for the material shall not exceed 10 mg/cm^2 and also shall not exceed 60 ppm when extrapolated based on surface area and volume of contents packed.

4.3.6 *Drop Test*

4.3.6.1 The filled packs shall be subjected to a vertical drop test at 27 ±2°C as detailed in Annex D.

4.3.7 *Water Vapour Transmission Rate (WVTR) and Oxygen Transmission Rate (OTR)*

4.3.7.1 The packaging materials corresponding to packs passing the storage tests shall be tested for water vapour transmission rate (WVTR) according to the method prescribed in IS 1060 (Part 2) : 1960 at 38°C and 90 percent relative humidity and Oxygen transmission rate according to IS 4006 (Part 1): 1985 at 27±2°C and 60 ± 5 percent relative humidity and the values obtained shall be used as controlling specifications for acceptance test.

4.3.8 *Product Resistance Test*

4.3.8.1 The printed containers when tested in accordance with the method given in Annex E shall not show any significant removal of the print from the container surface and the print shall be legible to the naked eye after the test.

5 PACKAGING AND MARKING

5.1 The packaging material shall be supplied in rolls over wrapper by plastic films weighing not more than 75 kg or any other mode as agreed to between the supplier and the purchaser, including the mass of the core on which it is wound.

5.1.1 The reel shall be marked with the following information:

a) Indication of the source of the manufacture,
b) Suitable packaging system,
c) Number of packs,
d) Volume per pack, and
e) Production Order Number and Reel Number.

5.1.2 The packs shall be supplied in corrugated boxes or plastic crates and number of packs per box/crate shall be as agreed to between the supplier and the purchaser.

5.1.2.1 The box shall be marked with the following information:

a) Indication of the source of the manufacture,
b) Number of packs, and
c) The volume of each pack.

5.1.3 *Packs*

5.1.3.1 The packs shall be printed with the information as required by the purchaser and the statutory requirement.

ANNEX A

(*Clause* 2.1)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
1060 (Part 2) : 1960	Method of sampling and test for paper and allied products: Part 2
2508 : 1984	Low density polyethylene films (*second revision*)
2771 (Part 1) : 1990	Fibre board boxes: Part 1 Corrugated fibre board boxes (*second revision*)
2828 : 1964	Glossary of terms used in plastic industry
4006 (Part 1) : 1985	Method of test for paper and pulp based packaging materials: Part 1 (*first revision*)
4261 : 1967	Glossary of terms relating to paper and pulp based packaging materials
7019 : 1982	Glossary of terms in plastics and flexible packaging, excluding paper (*first revision*)
7028 (Part 2) : 1988	Performance tests for complete, filled transport packages: Part 2 Vibration test at fixed low frequency (*first revision*)
8639 : 1977	Code for evaluations of effects of packaging on sensory quality of foods and beverages
9845 : 1986	Methods of analysis for the determination of specific and/or overall migration of constituents of plastics materials and articles intended to come into contact with food stuffs (*first revision*)
10633 : 1986	Specification for vanaspati (*first revision*)

ANNEX B

(*Clause* 3.2)

PROCEDURE FOR TYPE /PRODUCT APPROVAL

B-1 The packs shall be approved if it conforms to the requirements of test given in **3.2**.

B-2 Accordingly, the packs shall be subjected to vibration test followed by storage tests. Besides, drop test will also be carried out to prove packs integrity (leakers).

B-3 The material successfully passing the type tests shall be tested for physical characteristics like material construction, thickness which would be recorded and these should be the control in specification, as long as there is no change in the initial quantity of Vanaspati.

B-4 In the event of any change in the initial quality of Vanaspati or of the flexible packaging materials, fresh approval will be required and the type tests shall be carried out afresh as in **B-1** to **B-3** and the controlling specifications for acceptance test redetermined and fixed.

B-5 When the proposed changes are such that it may not be expected to significantly affect the performance (satisfactorily passing type test); the certifying/testing authority may at its discretion recommend waiving complete re-approval in order to determine significance and acceptability of the proposed changes and to redetermine and to fix the controlling specification for acceptance test.

B-6 If any suppliers of the packs, packaging material wish to obtain product/type approval for a particular type of material and meant for packing a type quality of Vanaspati having earlier obtained approvals for other types of material for packing the type and quality of Vanaspati. It shall file a certificate stating that the product has successfully passed the type test as stated in **B-1**. The certifying/testing authority may recommend waiving of these type tests or may require only partial approved tests for the purpose of determining the controlling specification tests.

B-7 In the event of the material found to be failing one or more type tests, the testing authority may call for fresh samples not exceeding twice the number of original samples and subject to them all the test(s) of the tests in which the failure occurred. The test may be considered to have been satisfied and product/type approval given only if the repeat test(s) show no failure.

ANNEX C

(*Clause* 4.3.4.1)

VIBRATION TEST

C-1 VIBRATION TABLE

C-1.1 This shall be equipment conforming to IS 7028 (Part 2) : 1988.

C-2 MODE OF PACKAGING

C-2.1 Packs shall be packed upside in corrugated fibre box conforming to IS 2771 (Part 1) : 1990.

C-3 CONDITIONING

C-3.1 The box containing the packs filled with Vanaspati shall be left under ambient conditions to attain room temperature. In case of dispute, the ambient condition shall be 27±2°C and 65±2 percent relative humidity.

C-4 PROCEDURE

C-4.1 Four outer boxes containing the product shall be kept on the vibration table and vibrated at a peak acceleration of slight above 1 g for 30 minutes. After the test, the packs are examined for apparent leaks and removed. The remaining are wiped clean and place on flat bloting paper on the vibration table at 2 M_2 or 10 minutes and the packs are examined for apparent leaks and counted and added to the leakers.

C-5 CRITERIA FOR ACCEPTANCE AND RETESTING

C-5.1 The lot shall be considered passing in the test, if not more than one pack show leakage in the test. In the event of leakage of more than one pack, a retest involving the same quantities as per **C-4** shall be taken and tested for vibration test. The lot shall be considered passing in the retest if not more than one pack shows leakage, otherwise the lot is rejected.

ANNEX D

(*Clause* 4.3.6.1)

DROP TEST

D-1 SAMPLING

D-1.1 Ten filled unit packages from a lot of one hour production or 1 000 packs filled and sealed in the usual way. The test samples are allowed to cool to 42±2°C.

D-2 METHOD

D-2.1 Five samples shall be tested first. Each shall be subjected to a flat drop at 42 ±2°C on a flat hard surface. The drop height of the containers up to 1 kg capacity shall be 1.2 m.

D-3 CRITERIA FOR ACCEPTANCE AND RETESTING

D-3.1 Each flexible pack shall be examined for any leakage of the contents and determination after the test. If none of the five packs selected for the test fails in drop test, the lot should be considered as passing. If one sample fails the other set of five shall be tested in the same manner as above. If none fails, the lot shall be accepted otherwise the lot shall be rejected.

ANNEX E

(*Clause* 4.3.8.1)

TEST FOR PRODUCT RESISTANCE OF PRINTED CONTAINERS

E-1 Leave the containers to stand for at least 24 hours after printing.

E-2 Smear the containers, or representative section cut from the printed area, with molten vanaspati at 40±2°C and leave it for 1 hour.

E-3 Wash the container or its representative section with cold water.

E-4 Rub each container or representative section firmly with hard paper tissue ten times.

E-5 There shall be no significant removal of the print from the surface of the container and the print shall be legible to the naked eye after the test.

ANNEX F

(*Foreword*)

COMMITTEE COMPOSITION

Paper and Pulp Based Packaging Sectional Committee, CHD 016

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Shri Ambrish Bhargava Shri Sanjay Verma (*Alternate*)	All India Small Paper Mills Association, Bombay
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Shri Anjan Kar, Director (Chem)	Director General, BIS (*Ex-officio Member*)

Member Secretary
Shrimati M. Passi
Deputy Director (Chem), BIS

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